

Education Committee  
Testimony prepared by Dr. Alice Pritchard  
RB 5489 *An Act Concerning Secondary School Reform*  
March 15, 2010

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Good afternoon. My name is Alice Pritchard and I am the Executive Director of the Connecticut Women's Education and Legal Fund (CWEALF). CWEALF is a statewide non-profit organization dedicated to empowering women, girls and their families to achieve equal opportunities in their personal and professional lives.

For 37 years, CWEALF has worked to advance women's opportunities. We believe that extending, enhancing and the coordination of opportunities in education will improve the future earning potential of all Connecticut residents, particularly women and girls. Therefore, I am here today to urge your support RB 5489 *An Act Concerning Secondary School Reform*.

While the entire bill is important to the educational needs of youth in Connecticut, we applaud the legislature's efforts to align the state's high school math requirements with increasing college and professional expectations by requiring that students take Algebra II. Algebra II is often referred to as a "gateway" course because it increases access to postsecondary education, is important for success in college and graduate school, and is critical to many occupations, including those that don't require a four-year college degree.

Evidence shows that the higher level of math a student attains in high schools, the greater chance he or she will attend and graduate from college and find higher-paying jobs in the future. Students who complete Algebra II in high school more than double their chances of earning four-year college degrees, while low-income students who take advanced math go to college almost three times the rate than similar students who do not.

Many, if not most, colleges require more than basic math classes for admission. The University of Connecticut, for instance, states that competitive applicants should enroll in rigorous programs of study and college preparatory work that extends beyond the minimum academic requirements of their high school. Some technical schools, like Virginia Tech, mandate two years of algebra to be considered for admittance. In fact, Virginia Tech states that it gives admission preference to those who complete math beyond Algebra II.

It is not only students attending four-year colleges that need to complete advanced math courses in high school. Students in two-year colleges also must have acquired Algebra II skills in order to pass placement tests needed to get into "credit-bearing" courses, including advanced algebra.

Even high school graduates who do not attend college find that it was important to have taken Algebra II. Many jobs that do not require college but pay well and allow for career advancement require strong mathematics, problem-solving and reasoning skills.

Having passed advanced mathematics like Algebra II means that college students are ready to enter higher level classes once they arrive at college, and don't spend their limited tuition money on basic developmental classes. Currently, almost 30% of college freshmen must enroll in at least one remedial course because they are not prepared for college-level work in a particular subject.

Once in college, students will find that Algebra II is a prerequisite to further study in a wide range of fields, particularly science, technology, engineering and mathematics (STEM). These and other courses will help our state lead the nation in green technology and clean, renewable energy, while also rebuilding the economy and creating jobs. Many colleges, including the Connecticut State University System, require their students to pass intermediate levels of Algebra to graduate.

In addition to skills necessary for jobs in demanding fields, students who take advanced algebra and other rigorous math courses also acquire unique critical thinking skills like the ability to analyze patterns, think logically, and solve problems. These skills enable them to compete for interesting and high-paying jobs and make them more productive throughout their career. Problem-solving and critical thinking skills acquired in an advanced math class like Algebra II can help students even if they do not continue their education beyond high school or do not pursue math or science-related occupations.

The lack of gender and ethnic diversity of students entering STEM and other demanding educational programs and careers present significant challenges to building a productive and globally competitive 21<sup>st</sup> century workforce. Requiring high school students throughout Connecticut to complete Algebra II will help further the goal of advancing opportunities for women and minorities for employment in higher-skilled, better-paying jobs. In addition the requirement to take one credit in a STEM elective and two credits in career electives can prepare students for these 21<sup>st</sup> century careers.

The continuing lower rates of girls taking advanced math classes and other challenging fields of study has led to an uneven rate of participation and advancement in STEM-related careers for women. Although their involvement in these professions has increased in the last two decades, they are still seriously underrepresented in many fields like mathematics, computer science and engineering, where women can make approximately 20-30% more on average than women in more traditional jobs. Women in Technology reports that women comprise only 12% of the country's engineering workforce. And although the percentage of women getting Bachelor's Degrees rose to more than 57% in 2007, the percentage of math degrees obtained by women decreased 2 points and the percentage of computer science degrees for women shrunk from 37% in 1984 to 18.6% in 2007 according to the Mathematical Association of America.

A large achievement and opportunity gap exists in the study of mathematics in U.S. schools. Historically, minority students and girls have lacked access to advanced math classes and been discouraged from enrolling in them. Earlier in the decade, African-American and Hispanic students were twice as likely as their white and Asian peers to complete only basic math courses. Minority students end up not being well-prepared for advanced education, which shows up in college enrollment figures. While 75% students from high-income families obtained at least a Bachelor's Degree by the age of 24 in 2006, fewer than 9% students raised in low-income families did the same.

More rigorous study -- including the proposed new Algebra II mandate in this bill -- will be crucial to reducing the achievement gap between white and minority students. This will be particularly vital for Connecticut, where in 2020, more than one-quarter of Connecticut's working age population will be from minority populations, and nearly half of all 25-29 year-olds will be minorities.

The U.S. Department of Education has established that a challenging math education can build real opportunities for students who might not otherwise have them. It has been found that completing challenging courses like advanced math is a more important factor in determining college attendance than either family background or income.

The results of reduced access to advanced educational opportunities are demonstrated in numbers that show that African-Americans and Hispanics are severely underrepresented in challenging and well-paying occupations like science and engineering. In 2007, according to the DOL's Bureau of Labor Statistics, blacks were 11% of the labor force, but only 8.8% of computer scientists and 5.3% of engineering occupations. Hispanics, 14% of the labor force in 2007, fared even worse.

The advanced math requirements proposed in Raised Bill No. 5489 would most likely help improve the scores of our state students on standardized tests given to U.S. high school students across the country. Results on the SAT directly affect a student's ability to enroll in the college of his or her choice and to obtain needed college scholarships. Unfortunately, SAT results continue to show wide gaps in race and gender. These disparities have had a harmful impact on the availability of academic and economic opportunities to both women and students of color. Advanced mathematics study will be crucial to provide equal access to and improved participation for, women and girls and minorities in an increasingly STEM-driven economy.

*CWEALF has studied issues related to career and technical education for two decades. We are happy to share our research and technical assistance materials upon request.*